

DIMENSIONS OF THE PERENTIE (*VARANUS GIGANTEUS*) AND OTHER LARGE VARANIDS

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ABSTRACT

The body mass and total length of 84 *Varanus giganteus* captured on Barrow Island, W.A., were determined. These were compared with published data on the dimensions of *V. varius*, *V. salvator* and *V. komodoensis*. The largest Australian monitor is *V. giganteus*, which is exceeded in body mass and total length by both *V. salvator* and *V. komodoensis*.

INTRODUCTION

It is generally accepted that the Komodo dragon (*Varanus komodoensis*) is the largest species in the Family Varanidae, and the largest extant lizard. However, reports on the relative sizes of other large varanids are somewhat vague and imprecise, as few actual measurements are provided to substantiate the estimated sizes of these species (Bustard 1970; Minton and Minton 1973; Cogger 1975; Storr 1980; Storr *et al.* 1983; Vernet 1984; Pianka 1986; Wilson and Knowles 1988; Greer 1989).

The perentie (*Varanus giganteus*) is generally considered to be the largest lizard in Australia (Bellairs 1969; Bustard 1970; Cogger 1975; Storr 1980; Storr *et al.* 1983; Pianka 1986; Greer 1989), and is also implied to be second in size only to *V. komodoensis* (Storr *et al.* 1983). However, few measurements of the dimensions of *V. giganteus* have been reported (Greer 1989; Horn and Visser 1988; Mertens 1958; Pianka 1986; Storr 1980; Storr *et al.* 1983).

While conducting research on aspects of the ecology and physiology of *V. giganteus* on Barrow Island, W.A. in March 1983 and January-February and March 1984 (Green *et al.* 1986; King *et al.* 1989), 84 individuals of that species were captured. The body masses, snout-vent length (SVL), and total lengths (TL) of these animals were measured.

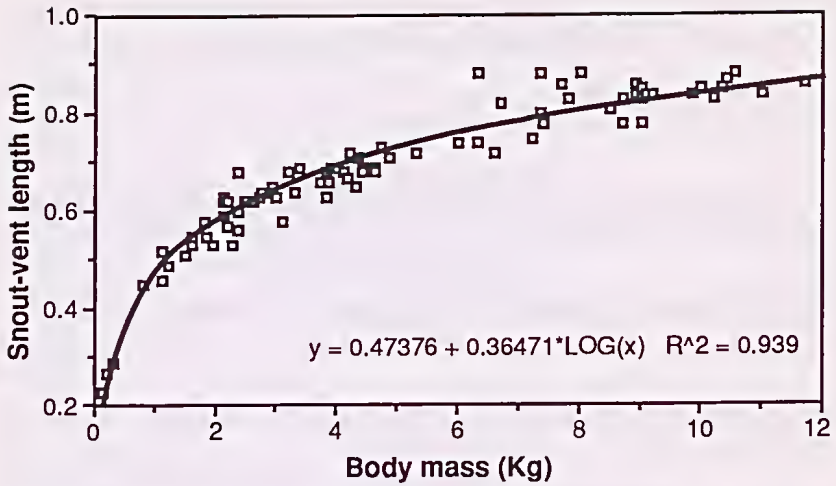


Figure 1. The SVL vs body mass of 84 *V. giganteus* from Barrow Island

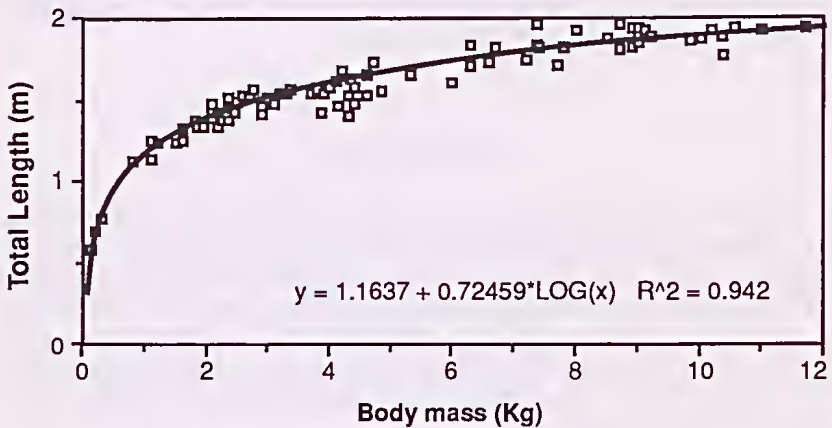


Figure 2. The TL vs body mass of 84 *V. giganteus* from Barrow Island

RESULTS

The body masses of *V. giganteus* ranged from 0.15 to 11.70 kg (Figures 1 and 2), SVL from 0.23 to 0.88 m (Figure 1) and TL from 0.59 to 1.96 m (Figure 2). The SVL's of ten individuals, weighing from 6.30 to 11.70 kg, were between 0.85 and 0.88 m, and the TL's of eleven individuals, weighing between 7.35 and 11.70 kg, exceeded 1.90 m. Both SVL (Figure 1) and TL (Figure 2) appear to asymptote at weights of 6 to 8 kg. Further growth beyond approximately 1.90 m seems to be in added bulk rather than additional increase in length.

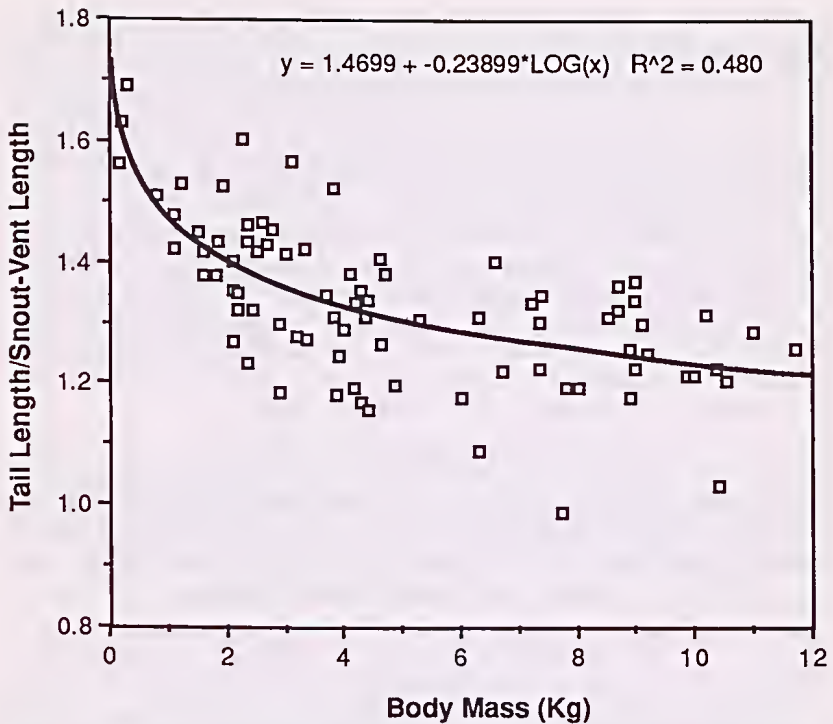


Figure 3. The tail length/ SVL vs body mass of 84 *V.giganteus* from Barrow Island

The ratio of tail length to SVL in *V.giganteus* decreases with increase in size and age, from over 1.6:1 in some small specimens to values below 1.2:1 in some large animals (Figure 3).

DISCUSSION

Length

Tail length is a dimension that is often of limited value in varanids as many individuals lose the tips of their tails at some stage, and the tail does not regenerate as it does in some other lizards. However, the approximate tail length (and ratio of tail length to SVL) of varanids can be determined by the difference between TL and SVL.

Cogger (1975) has stated that the tail length of *V.giganteus* is 1.3 times the SVL, but this takes no account of changes in the relative proportions of body parts during growth. Likewise, Storr (1980) cited tail lengths in *V.giganteus* of between 1.47 and 1.92 times SVL in animals with SVL's of 0.5 m or less. It appears that in both of these studies the relative body dimensions were biased towards young animals.

The longest SVL and TL dimensions found in the present study are

greater than those previously reported for preserved or live specimens (Butler 1970; Horn and Visser 1988; Mertens 1958; Storr 1980; Pianka 1986), although Mertens (1958) recorded a SVL of 0.91 m and a TL of 2.02 m for the mounted skin of the type specimen of *V. giganteus*. There have been unsubstantiated claims of *V. giganteus* reaching 2.4 m (Vernet 1984), 2.44 m (Bustard 1970), 2.5 m (Wilson and Knowles 1988) and 2.59 m (Minton and Minton 1973).

The lace monitor or tree goanna (*V. varius*) is generally regarded as the second largest Australian varanid. The longest SVL and TL reported for *V. varius* by Weavers (1988) were 0.75 and 1.92 m respectively. An unsubstantiated TL of over 2.13 m has been reported for *V. varius* (Minton and Minton 1973). The ratio of tail length to SVL is greater in *V. varius* than in *V. giganteus*, and the ratio does not appear to change with age (Weavers 1988).

There are few published data on the dimensions of the water monitor (*V. salvator*) of southeast Asia. The longest reported TL is 2.36 m, with a SVL of 1.04 m (Flower 1896). Whitaker and Whitaker (1980) state that this species may reach a TL of 2.5 m, and Vernet (1984) suggests that it may reach a TL of 3 m, however these two reports do not provide accurate measures of dimensions.

There have been claims that the TL of the arboreal varanid *V. salvadorii* of New Guinea exceeds 4 m. Schutze-Westrum (1972) claims that it reaches 4 m and possibly more, Auffenberg (1981) refers to a "probably exaggerated" newspaper report of a specimen with a TL exceeding 4.27 m, and Bustard (1970) refers to the species, which has an exceptionally long tail, reputedly exceeding a TL of 4.88 m. The greatest TL which has been measured for a living *V. salvadorii* is 2.04 m, and is from an animal captive in the San Diego Zoo (Horn personal communication).

The longest TL for a wild-caught *V. komodoensis* was 2.52 m (Auffenberg 1981), but there is a specimen in the Senckenberg Museum with a TL of 3.04 m (Mertens 1958), and a specimen acquired by the St. Louis Zoo was reported to be 3.09 m (Minton and Minton 1973). The tails of *V. komodoensis* are only slightly longer than their SVL's, however the tails of adults are proportionately shorter than those of juveniles (Auffenberg 1981).

Body Mass

The heaviest reported body mass for *V. giganteus* is 17 kg (Butler 1970). This is much heavier than any of the animals captured in the present study. It is also heavier than the maximum body mass of 14.0 kg reported for *V. varius* by Weavers (1988), or the 13.9 kg reported by Khan (1969) for the *V. salvator*. However, *V. salvator* can reach a body mass of 18 kg (Whitaker and Whitaker 1980), and it may reach over 30 kg (Minton and Minton 1973; Green unpublished observation). The body mass has been determined for very few *V. salvadorii* and the greatest value known is 7.0 kg (Horn personal

communication). All of these values are well below the heaviest value of 54 kg reported for a wild *V. komodoensis* (Auffenberg 1981) or the 166 kg value reported for a Komodo dragon received by the St Louis Zoo (Minton and Minton 1973).

The data presented here reinforce the claim that the perentie, (*V. giganteus*) is the largest Australian lizard in terms of length and body mass, while the lace monitor, *V. varius* is the second largest lizard in Australia. However, both of these Australian varanids are shorter and weigh less than either the Asian water monitor *V. salvator* or the Komodo dragon (*V. komodoensis*). The maximum length of *V. salvadorii* is uncertain, and no body mass measurements are available for specimens over 2.03 m.

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